

# Wilson Cook & Co

Engineering and Management Consultants  
Advisers and Valuers

Reply to: Auckland Office  
Our ref: 1111  
Email: jeffrey.wilson@wilsoncook.co.nz

2 May, 2011

Mr Warwick Anderson  
General Manager, Network Regulation North Branch  
The Australian Energy Regulator  
Marcus Clarke Street  
CANBERRA ACT 2601

Dear Mr Anderson,

**RE: REVIEW OF EXPENDITURE OF QUEENSLAND & SOUTH AUSTRALIAN  
GAS DISTRIBUTORS: ADDITIONAL REPORT IN RELATION TO ENVESTRA  
LTD (SOUTH AUSTRALIA)**

In response to your instructions, we have reviewed the revised proposals submitted to the AER in March 2011 by Envestra Ltd in relation to capital and operating expenditure for its South Australian gas distribution network in the five-year periods ending FY 2011 and FY 2016 and have pleasure in submitting this additional report.

## **1 Requested Scope of Review**

The requested scope of this further review was to assist the AER by considering any new information submitted by Envestra in support of its disagreement with certain of the AER's draft decisions. The issues on which the AER requested further and updated advice from us relate solely to the advice in our Final Report to the AER, dated 17 December 2010.

### *Capital Expenditure: Contingency Allowances*

We were asked to review pp. pp. 4-8 of attachment 7-7 to Envestra's draft decision response and attachment 7-8 (Parsons Brinckerhoff's report) which set out why Envestra disagrees with the removal of contingency allowances from parts of its proposed capital expenditure forecast. (In its revised proposal, Envestra and its consultant assert that various cost items considered likely to arise in its capital expenditure programmes were not included in its base cost estimates and therefore the inclusion of a contingency allowance in relation to them was justified.)

### *Capital Expenditure: New Road Authority Specifications*

We were asked to review pp. 9-10 of attachment 7-7 to Envestra's draft decision response, which provides additional information to support its business case no. S52 in relation to expenditure caused by the introduction of new road authority specifications.

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### *Capital Expenditure: Alleged Errors in AER's Draft Decision*

We were asked to review pp. 10-11 of attachment 7-7 to Envestra's draft decision response and comment on Envestra's re-statement of its capital expenditure forecast without contingency allowances.

### *Volume of Unaccounted-For Gas*

We were asked to review pp. 29-32 of attachment 6-9 to Envestra's draft decision response in which Envestra sets out why it disagrees with the reduction recommended in the volume of UAFG.

### *Operating Expenditure Related to Capital Expenditure (Survey of Domestic Regulators)*

We were asked to review p.34 of attachment 6-9 to Envestra's draft decision response in which Envestra sets out revised arguments in relation to contingencies. We were also asked to consider attachment 7-7 to Envestra's draft decision response regarding contingencies generally. (This matter is in relation to business case no. S03.)

### *Operating Expenditure Step Change for Additional Standby Crews*

We were asked to review pp. 24-29 of attachment 6-9 to Envestra's draft decision response in which Envestra sets out why it disagrees with the rejection of the step change described in business case no. S48.

In responding to these operating expenditure matters, we were asked to have regard, if relevant, to Envestra's revised base-year operating expenditure, which now accounts for a complete year of actual data and we were referred to pp. 33-34 of attachment 6-9 to Envestra's draft decision response and to attachment 6-7A to Envestra's draft decision response in this respect.

## **2 General Matters**

### *Our Approach to the Review*

Our general approach to this reassessment was to reconsider the validity of the statements made in our Final Report in light of the additional information received.

### *Matters Not Reviewed*

The review was limited to the context of our instructions – namely, to report on matters affecting or potentially affecting the adjustments to Envestra's expenditure that we recommended in our Final Report.

We were neither required to consider, nor did we receive, any submissions from stakeholders other than Envestra

### *Consultation*

Our terms of reference did not require us to consult with Envestra or to seek any additional information needed and there was not sufficient time available to enter into a dialogue, in addition to which we considered it reasonable to rely on Envestra's submissions as presented to the AER.

We were to present our draft report to the AER by 21 April 2011 and the scope of this report reflects that timetable.

### *This Report to be Read in Conjunction with Final Report*

This report should be read in conjunction with our Final Report.

### *Opinions Expressed in Final Report*

For the avoidance of doubt, we confirm that the opinions expressed in our Final Report remain unchanged unless specifically modified in this report.

### *Limitation*

Statements made in our Final Report and in this report are limited to the particular matters stated. No implied extension of our text, implied conclusion or opinion, or quotation taken in isolation from our text as a whole, should be attributed to us or be given any weight by the AER or any other authority considering the findings of our reports.

### *No Interpretation of Law or Rules Intended*

For the further avoidance of doubt, we emphasise that no statement made in our reports should be taken as an interpretation of the applicable Law or the Rules, as none is intended.<sup>1</sup>

## **3 Review**

### **3.1 Capital Expenditure (Contingency Allowances)**

Envestra disagrees with the removal of contingency allowances from parts of its proposed capital expenditure forecast, in accordance with the recommendations in our Final Report. In its revised proposal, it and its consultant assert that various cost items considered likely to arise in its capital expenditure programmes were not included in its base cost estimates and therefore the inclusion of a contingency allowance in relation to them was justified.

#### *Envestra's Argument*

Envestra argues in Attachment 7-7 that we misconstrued the contingency provisions in its forecasts, adding that the majority of such sums relate to un-costed items. It argues that the long time horizon of its forecasts mean that, for many projects, detailed design has not been undertaken and therefore such projects exclude the cost of activities or materials expected to be required but which, individually, are minor and do not justify close assessment at this stage. Attachment 7-7 p. 5 states, "The application of contingency by Envestra has reflected this gap between incomplete and complete project definition, rather than an amount to simply cater for cost over-runs or uncertainties".

Envestra give the example of the initial estimate for an augmentation project for which the route selection was based on the shortest route distance on a network map but where, after detailed design, the length was increased to avoid other utility services or environmentally sensitive obstacles.

#### *Parsons Brinkerhoff's Findings*

Parsons Brinckerhoff (PB) was engaged by Envestra to undertake an independent review of matters relating to Envestra's application of contingencies in its cost estimates. PB notes in its review, "Envestra states that projects are allocated a contingency amount to account for uncertainties in the project scope or execution, noting further that the amount of contingency is determined from a matrix based on the Association for the Advancement of Cost Engineering's *International Recommended Practice 17R-97 – Cost Estimate Classification System TCM Framework 7.3 – Cost Estimating and Budgeting*." PB goes on to say, "... the estimates used in Envestra's access arrangement submission employ baseline cost estimates developed from the partially complete project definitions available at the time of estimating. As the project definitions are only partially complete, Envestra has added a percentage contingency to its baseline estimates to account for specific cost items that will arise, but which are not yet quantifiable due to the incomplete nature of the project definitions. The particular percentage contingency employed in this process is established from the matrix after assessing the level of completeness of each project definition. We also understand that the intention of this process is to 'close the gap' (as it were) between the baseline estimates derived from incomplete project

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<sup>1</sup> Section 2.1 of the Final Report makes it clear that we did not attempt to interpret the Rules (although we stated our interpretation of the terms *prudence*, *efficiency* and *good industry practice*, as they were not defined in our terms of reference).

definitions, and the baseline estimates that would be derived if completed project definitions were available.”

On pp. 5-6 of its review, PB identifies 13 aspects in relation to which a contingency is expected to make provision for costs not fully identified and which include such things as co-ordination with other utility underground services, dealing with constraints on working hours, traffic management, dealing with environmental or cultural heritage issues, modifications to the design, etc.

PB goes on to say, “In PB’s opinion, these are typical cost items that frequently arise in utility estimates, particularly in works planned for congested urban and CBD environments. As such, PB would anticipate many (if not all) of these specific cost items to be included in detailed estimates based on completed project definitions, or accounted for through provisional amounts in estimates based on less detailed project definitions.” It adds, “Having considered the completeness of the project definitions supporting Envestra’s estimates, as well as the range of specific cost items allowed for in the contingency, it is apparent to PB that this contingency amount actually represents an identifiable set of specific cost items that while not explicitly itemised within each estimate, are implicit within the contingency percentage.”

However, PB adds a caution, stating on p.6, “However, after examining the specific cost items allowed for in the contingency amount, PB is not completely satisfied that all of the items identified are fully provisional in nature, and do not contain some contingent characteristics. For example, while it is likely that Envestra will incur additional costs to accommodate environmental issues, the extent of these additional costs are implicitly an unknown portion of the total contingency amount, and hence it is difficult to assess whether the amount included is reasonably the expected cost, or includes an allowance for more (or less) than the expected cost. Similarly, re-routing mains to improve security of supply could be seen as somewhat speculative in nature, and without specific demonstration of the likelihood of incurring such additional costs, this component of the contingency could at least in part be cast as a contingent amount.”

PB notes that even at the “Extremely High” level of project definition, Envestra’s costing matrix allocates a 5% contingency to the project estimates. PB then concludes that this percentage of “true” contingency may exist in lesser-defined projects and hence in circumstances where Envestra has applied a 20% contingency, the provisional component of this contingency may be in the range of 15% - 20%.

### *Envestra’s Revised Proposal*

In apparent recognition of PB’s findings – in particular, PB’s view that up to 25% of the contingent amount may relate to ‘contingent risk’, Envestra appears to have revised its capital expenditure budgets, reducing the included contingency by 25% in all cases.

### *Our Assessment*

We have considered this assertion in light of the general principles relating to contingencies and risk, as set out in section 4.7 of our Final Report.

We find no argument by Envestra or PB that the principles we espoused in that section are incorrect. To the contrary, we considered that PB’s views generally tended to support our contention that whilst a contingency allowance may need to be called upon in some instances, such allowances are unlikely to be called upon generally, or to their full extent; and to argue that they would is to say, in essence, that the business concerned is unable to estimate its costs accurately or that it does not wish any risk of cost overruns to remain.

Envestra’s argument that the contingency sums relate to the insufficient definition of the works does not counter our argument either, as we deal specifically with that point in our Final Report in the text quoted in the preceding paragraph.

We further note that neither Envestra nor PB have acknowledged that the cost estimates are generally based on average costs of pipe-laying per kilometre or suchlike and that such rates by

definition reflect the average of the many different situations that are encountered when the work is undertaken. It is not clear, therefore, that the contingency sums are for entirely “un-costed” items or activities.

PB has noted that Envestra’s contingency application matrix includes a 5% contingency for “highly detailed” project scopes and that this cannot be considered a provisional sum for un-costed items. However, PB then assumes that any additional contingency amount is a proxy for un-costed items. We consider that conclusion speculative and likely to be wrong, as it is axiomatic that the mix of provision for risk and for un-costed items will vary from one project to another and from projects in an early stage of development to projects in a later stage of development.

Similarly, Envestra’s proposal to reduce the contingency sum by 25% in each case is speculative and likely to be wrong as well.

We come back to the point we made in our Final Report and quoted above: whilst a contingency allowance may need to be called upon in some instances, such allowances are unlikely to be called upon generally, or to their full extent; and to argue that they would is to say, in essence, that the business concerned is unable to estimate its costs accurately or that it does not wish any risk of cost overruns to remain”.

We therefore reject Envestra’s argument and retain the view expressed in our Final Report in relation to the need to remove contingency allowances.

### **3.2 Capital Expenditure (New Road Authority Specifications)**

We were asked to review pp. 9-10 of attachment 7-7 to Envestra’s draft decision response, which provides additional information to support its business case no. S52 in relation to expenditure caused by the introduction of new road authority specifications.

We expressed various doubts in our Final Report about the proposed expenditure under this heading but left the door open for Envestra to provide additional supporting information, concluding on p. 35 of our final Report, “Whilst recognising that the work appears necessary, we consider that the amount agreed in respect of it ought to be reduced unless the business is able to satisfy the AER in relation to the points we have raised. In the absence of sufficient information, we propose an allowance equal to half the amount proposed by Envestra.”

Our review of the additional information supplied by Envestra suggests that the reduction we recommended in our Final Report is no longer required.

### **3.3 Capital Expenditure (Alleged Errors in AER’s Draft Decision)**

We noted in our Final Report (p. 37) that we did not have sufficient information to calculate the amount to be removed in respect of contingencies, although we estimated it in section 4.9 of that report. We suggested that the business should be asked at an appropriate time to re-state its expenditure forecast without contingency allowances.

It is an accounting matter to confirm the figures and so we offer no comment on the tables on pp. 10-11 of attachment 7-7 to Envestra’s draft decision response other than to note again that the contingency allowances ought to be removed entirely, as recommended in our Final Report.

### **3.4 Volume of Unaccounted-For Gas**

We argued in our Final Report that the 9% annual rate of deterioration of cast iron and unprotected steel pipe assumed by Envestra in its forecast of UAFG was unrealistic and that a nominal rate of deterioration of 4.7%, representing the average between Envestra’s rate and a lower bound of zero would be more appropriate; and we further argued that the rate of reduction in UAFG as projected by Envestra did not appear to be commensurate with the rate of forecast

capital investment in mains replacement. Accordingly, we recommended a higher rate of reduction in UAFG over the next period.

Envestra claims on p. 29 of its attachment 6-9 that:

- (a) we mistakenly took the view that a correlation should exist between the number of leaks (either found by Envestra or reported by the public) and UAFG levels; and
- (b) replacement of a leaking main results in an immediate reduction (i.e. no time lag) in the amount of UAFG payments that Envestra is required to make in respect of market settlements for gas.

(It claims, “this led to [us] to comment that “we are not able to reconcile Envestra’s volumetric estimates of UAFG with the proposed rate of replacement of mains”.)

Envestra claims elsewhere that our calculation of an average pipework deterioration rate of between 9.4% (Envestra’s figure) and zero was in error, as a nil deterioration rate infers that old cast iron mains do not deteriorate over time.

None of these claims is correct for reasons that we now explain.

### *Correlation*

Contrary to Envestra’s assertion, we did not rely on a direct correlation existing between the number of leak repairs and the UAFG leakage, other than to the extent it is axiomatic that a decrease in the number of reported leaks due to pipe replacements will be reflected in reduced leakage – or at least it should be, provided that the replacement works are prioritised efficiently.

### *Annual Rate of Deterioration of Old Pipework*

Envestra stated in its original submission that the moving annual total UAFG for the Adelaide metropolitan network had been increasing, on average, by at least 5% per year over the last 5 to 6 years, despite an annual CI and UPS replacement rate of 4% during this period. From this, it concluded that the underlying rate of deterioration of the remaining CI and UPS pipes was 9%.

In our Final Report, we stated on p.28, “We have already questioned the rate of deterioration of 9% p.a. assumed by Envestra and further note that it is equivalent to just under a 50% increase in leakage rates over the period. We find it hard to believe that such a rate of increase will be sustained over the period, although the possibility exists.” We added, “We further note that the number of leak repairs is projected by Envestra to fall by 60% over the next period. The minimal reduction in losses forecast by Envestra does not appear to be in alignment with that projection.”

We further note that the evidence cited by Envestra for its pipe deterioration rate is based on the observed change in UAFG in the Adelaide Metropolitan area. This data is plotted in Figure 1, both as a percentage of gas input and directly as gas volume in Terajoules.

On a “percentage of input” basis, UAFG shows an increase from approximately 6% to 9% over the 5 years plotted in the figure below, representing a linear rate increase of approximately 5% p.a., much as described by Envestra.<sup>2</sup> However, this figure (5%) is affected by the reduction in gas throughput that occurred in the network during the same period.

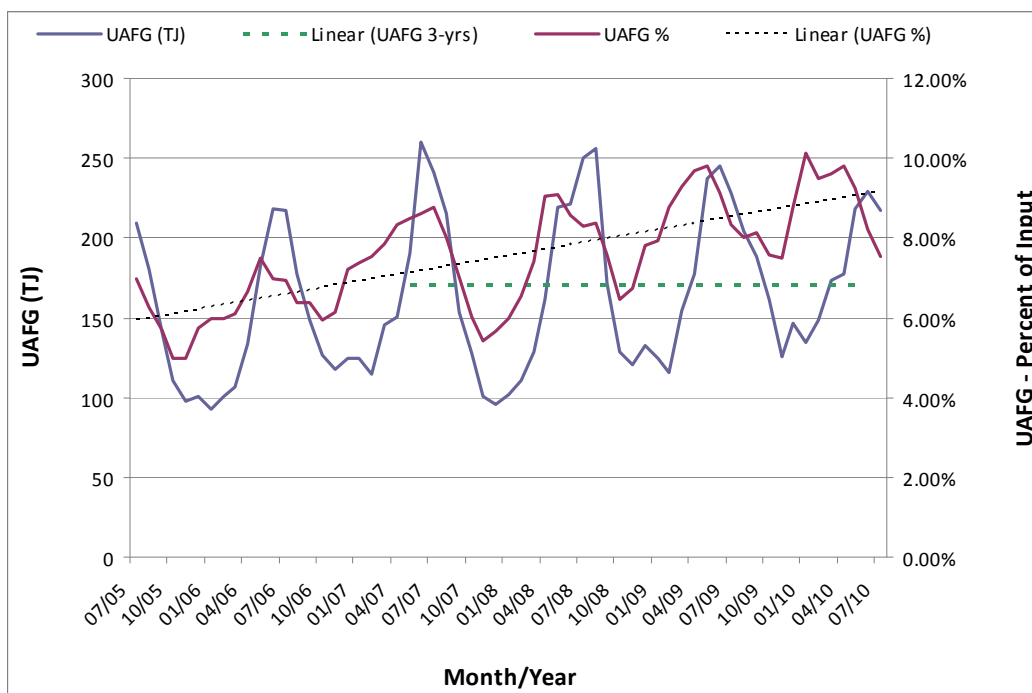
A better analysis of UAFG would be achieved by the direct assessment of gas volumes – as proposed in our Final Report. On this basis, UAFG is found to have a **lower** annual rate of increase over the 5-year period; and, furthermore, only a small or probably nil rate of increase over the last 3 years. This can be seen from the figure, the blue line being the volumetric analysis and the green line being its movement over the last three years.

The figure reflects the combined effects of pipe replacement and the deterioration of the remaining pipes, of course, along with the impact of factors such as soil type and ground condition, both of which can cause changes to occur in the rates of deterioration.

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<sup>2</sup> An increase to 9% off a 6% base over 10 years represents a 5% p.a. increase in the percentage UAFG.

**Figure 1: Trend in UAFG in Metropolitan Adelaide**



A further consideration is that the rate of deterioration of cast iron pipes can be expected to differ from the rate of deterioration of steel pipes and both rates are expected to differ from area to area in the network.

We further consider that the replacement of cast iron and steel pipes could, if properly prioritised, reduce the rate of increase in UAFG on the remaining pipes or possibly arrest it.

Considering these factors in combination, we remain of the view that our use of a lower bound of zero is justified when the rate of deterioration of pipes awaiting replacement is considered.

#### *Timing of Payments*

Envestra’s contention that we assumed that “replacement of a leaking main results in an immediate reduction (i.e. no time lag) in the amount of UAFG **payments** that Envestra is required to make in respect of market settlements for gas” cannot be correct as we did not consider any matters to do with payments related to UAFG at all, only matters to do with its **volume**.

#### *Time Lag in Volumetric Reduction*

As far as our projected volumetric reduction is concerned, our calculation of UAFG volumes – see table 4.2 on p.28 of our Final Report – assumed that each annual reduction in volume would be achieved in the year **after** the pipe concerned was replaced and so it is incorrect to argue that we have assumed a volumetric reduction benefit in the same year as the pipe replacement to which it relates.

#### *Conclusion*

In the absence of any new information from Envestra, we maintain the view that the volumetric analysis of UAFG presented in our Final Report is reasonable and is still applicable to the AER’s considerations.

### **3.5 Operating Expenditure (Survey of Domestic Regulators)**

The requested matter in relation to operating expenditure associated with the survey of domestic regulators appears to relate to contingencies. Our view on contingences has been explained earlier in this report and we have nothing further to add.

### **3.6 Operating Expenditure (Step Change for Additional Standby Crews)**

In its original proposals, Envestra proposed the recruitment of 12 additional employees to establish three further three-man work crews plus three first-response field staff to cover after-hour emergencies (*viz.* between 7 p.m. and 7.30 a.m.) at weekends (Business Case S48). This work is presently undertaken by existing field staff that provide standby support outside normal business hours in addition to working normal eight-hour days. The reasons given for the need for additional staff were the need to address worker fatigue, reduce the risk of injury and comply with the Government's amended *Working Hours Code of Practice* introduced on 1 July 2010. It was acknowledged that the code's requirements were not mandatory. Details were given of the workload of the existing crews.

In our Final Report, we noted that the mains replacement programme was expected to result in a progressive and significant drop in the number of leak repairs to mains, with an estimated fall of 60% by the end of the next period. We stated that this should be reflected in a proportionate drop in the work required outside normal business hours and that Envestra do not appear to have allowed for this in its business case. We also stated that Envestra had not identified the cost of other alternatives to providing appropriate stand-down periods for its staff. We thus did not consider that Envestra has demonstrated that the proposed expenditure was prudent or efficient.

Envestra claims that the AER's draft decision on this matter is unreasonable on the following grounds:

- (a) One of the principal reasons given in our report for rejecting the expenditure was that the mains replacement programme would or should see a reduction in after-hours repairs and this had not been taken into account, is not correct. Envestra now states that the majority of after-hour calls relate to meter leaks on the high pressure system rather than leaks on pipe and thus that the mains replacement work will **not** have a material impact on the volume of after-hour calls.
- (b) Our assertion that Envestra had not considered alternatives is not correct.
- (c) Envestra considered that we had not given sufficient weight to Envestra's obligations under the code to provide, as far as reasonably practicable, a safe working environment and safe systems of work; and that whilst it is in the short term, it does not consider that it has sufficient crews to provide a safe and effective standby service in the medium- to long term.

Taking Envestra at its word, the first point may be accepted.

In relation to the second point (that alternatives had not been considered), we acknowledge that the business case did consider the use of contractors to provide after-hour service. However, Envestra does not explain, either in the original business case or in the additional information now provided, how the required number of 12 extra staff was arrived at and whether options were considered that would allow compliance with the code with fewer staff.

In support of the final point, Envestra has provided additional information on the obligations it has under health and safety legislation and more information on existing work practices and the reasons why changes are needed.

Having considered the additional information, we accept that there is a case for an increase in the number of workers required. Therefore, on balance, we accept the proposed step change as prudent.



However, we consider that the costs may be overstated and that their efficiency has not been demonstrated to our satisfaction. For example, additional vehicles are to be provided for the new crews and full fixed-and-running costs have been allowed for them. There should, however, be savings in the running costs of existing vehicles, as no additional after-hour work will be carried out. No allowance has been made for these reduced running costs in the business case.

We therefore recommend that the costs proposed for this step change be allowed, less \$53,000 (in 2009 dollars) p.a., being the marginal vehicle running and maintenance costs that should be offset by reductions in the running and maintenance costs of vehicles presently used for this work.

#### **4 Conditions Accompanying Our Opinion**

##### *Disclosure*

Wilson Cook & Co Limited has prepared this additional report in accordance with the instructions of its client on the basis that all data and information that may affect its conclusions have been made available to it. No responsibility is accepted if full disclosure has not been made. No responsibility is accepted for any consequential error or defect in our conclusions resulting from any error, omission or inaccuracy in the data or information supplied directly or indirectly.

##### *Disclaimer*

This report has been prepared solely for our client, the Australian Energy Regulator (AER), for the stated purpose. Wilson Cook & Co Limited, its officers, agents, subcontractors and their staff owe no duty of care and accept no liability to any other party, make no representation or warranty as to the accuracy or completeness of the information or opinions set out in the report to any person other than to its client including any errors or omissions howsoever caused, and do not accept any liability to any party if the report is used for other than its stated purpose.

##### *Non-Publication*

With the exception of its publication by the AER in relation to its review of Envestra's expenditure proposals, neither the whole nor any part of this report may be included in any published document, circular or statement or published in any way without our prior written approval of the form and context in which it may appear.

Yours faithfully

**Wilson Cook & Co Limited**

A handwritten signature in blue ink that reads "Wilson Cook & Co." with a stylized, cursive script.